

Pre Calculus
4.4C Classwork/Homework

Name:
Date:

You **MUST** draw a picture and write an equation for each problem. Round your answers to the nearest tenth. Use a separate sheet of paper or the back of this paper.

1. A 96 foot tree casts a shadow that is 120 feet long. What is the angle of elevation of the sun?
2. A builder wishes to construct a ramp 24 feet long that rises to a height of 5 feet above the ground. Find the angle of elevation of the ramp.
3. A boat is 87 miles east and 29 miles south of the harbor. If the boat is heading directly for the harbor, what bearing should the captain follow? (*Note: bearings include both angle degrees and compass direction*)*
4. A pilot is 480 miles north and 110 miles west of the Jacksonville airport. What bearing should he follow if he wants to fly directly to the Jacksonville airport?

Review questions:

5. From the top of a 100- foot building, you observe a car moving toward you. The angle of depression changes from 22 degrees to 46 degrees while you observe. How far does the car travel while you are observing it?
6. The angle of elevation to the top of the Empire State Building in New York is 11° from a point on the ground 1 mile from the base of the building. Find the height of the Empire State Building in feet.
- 7.. A plane is flying at an elevation of 35, 000 feet within sight of the Gateway Arch in St. Louis, Missouri. The pilot would like to estimate her distance from the Arch. She finds that the angle of depression to a point on the ground below the arch is 22° .
 - (a) What is the distance between the plane and the arch?
 - (b) What is the distance between a point on the ground directly below the plane and the arch? (along the ground)
8. The altitude of an equilateral triangle is 5 cm. What is the length of a side of the triangle?
- 9.. Find the altitude of an isosceles triangle with base 4.24 feet. The vertex angle of the triangle measures 85° .
10. A plane leaves the airport flying at 375 mph and follows a course with a bearing of $S47^\circ W$. After two hours, how far south and how far west is the plane from the airport?